WHAT IS CLAIMED IS:

We claim:

1. A film projector movement for transporting film through a motion picture projector, wherein the film has a series of frames and a plurality of perforations along edges of the film, comprising:

a plurality of sprockets having teeth for engaging the perforations and for moving the film through the projector;

an intermittent advance mechanism that moves the film frame-by-frame past an aperture in the projector;

a motive element that rotates the sprockets and actuates the intermittent advance mechanism; and

a controller that controls the motive element and is adapted to either maintain or change the rotational speed of the sprockets and the positioning of the intermittent advance mechanism based on the format of the film in terms of the number of perforations spanned by each frame on the film or based on the projection frame-rate in terms of frames per second.

2. The film projector movement of claim 1, wherein the plurality of sprockets comprises a pair of constant speed sprockets, one on each side of the aperture, having teeth for engaging the perforations and for moving the film through the projector.

3. The film projector movement of claim 2, wherein the intermittent advance mechanism comprises an intermittent sprocket having teeth for engaging the perforations and for advancing the film intermittently frame-by-frame past the aperture.

4. The film projector movement of claim 3, wherein the motive element comprises:

a first motor having a rotational output for rotating the pair of constant speed sprockets;

a second motor having a rotational output for intermittently rotating the intermittent sprocket; and

a third motor having a rotational output for rotating a shutter.

5. The film projector movement of claim 4, wherein the first motor comprises a servomotor, and the second motor comprises a servomotor.

6. The film projector movement of claim 5, wherein the controller controls and coordinates the first and second motors and is responsive to a trigger signal for changing the output of the first and second motors, individually, and thus the rotational speed of the pair of sprockets and the positioning of intermittent sprocket, wherein the trigger signal indicates when the film in the projector changes from a format in which each frame spans a first predetermined number of perforations on the film to a format in which each frame spans a second predetermined number of perforations on the film.

7. The film projector movement of claim 5, wherein the controller controls and coordinates the third motor and is responsive to a trigger signal for changing the output of the third motor and thus the rotational speed of the shutter, wherein the trigger signal indicates when the film in the projector changes from a mode in which the film advances at a first predetermined frame-rate to a mode in which the film advances at a second predetermined frame-rate.

8. The film projector movement of claim 7, wherein the controller, in response to the trigger signal, controls the output of the second motor to execute a first "indexing" film advance, the span of which is determined by the frame-heights of the outgoing and incoming film formats, followed by an output of successive film advances with a span corresponding to the frame-height of the incoming format.

9. The film projector movement of claim 8, wherein the trigger signal is based on the number of perforations spanned by each frame on the film.

10. The film projector movement of claim 9, wherein the trigger signal is generated automatically during operation of the projector by electronic, magnetic, optical, or mechanical means.

~~11. The film projector movement of claim 9, wherein the trigger signal is generated manually.~~

12. The film projector movement of claim 2, wherein the intermittent advance mechanism comprises a mechanism other than a rotating toothed-sprocket.

13. The film projector movement of claim 12, wherein the intermittent advance mechanism may either rotate or provide reciprocal motion to intermittently advance the film.

14. The film projector movement of claim 13 , wherein the motive element comprises:

a first motor having a rotational output for rotating the pair of constant speed sprockets;

a second motor having a rotational or reciprocal output for actuating the intermittent advance mechanism; and

a third motor having a rotational output for rotating a shutter.

15. The film projector movement of claim 13, wherein the motive element comprises:

a first motor having a rotational output for rotating the pair of constant speed sprockets; and

a second motor having a rotational or reciprocal output for actuating the intermittent advance mechanism and the shutter.

16. In a motion picture film projector, a film projector movement for transporting film having a series of frames with images thereon, and a plurality of perforations along edges of the film, comprising:

an intermittent advance mechanism for engaging the perforations and for advancing the film frame-by-frame past an aperture in the projector;

a pair of constant speed sprockets, one on each side of the aperture and the intermittent advance mechanism, having teeth for engaging the perforations and for moving the film through the projector in cooperation with the intermittent advance mechanism;

a first motor having a rotational output for rotating the pair of constant speed sprockets;

a second motor having a rotational or reciprocating output for actuating the intermittent advance mechanism;

~~a third motor having a rotational output for rotating a shutter;~~

a first controller that controls and coordinates the rotational output of the first motor, wherein the first controller is adapted to change or maintain the rotational output of the first motor, without substantially interrupting projector operation, to thereby change or maintain the rotational speed of the pair of constant speed sprockets when the film in the projector changes from a first film format in which each frame spans a first predetermined number of perforations on the film to a second film format in which each frame spans a second predetermined number of perforations on the film;

wherein the first controller also controls and coordinates the third motor and is responsive to a trigger signal for changing the output of the third motor and thus the rotational speed of the third motor, wherein the trigger signal indicates when the film in the projector changes from a mode in which the film advances at a first predetermined frame-rate to a mode in which the film advances at a second predetermined frame-rate; and

a second controller which, in response to the trigger signal, controls the output of the second motor to execute a first indexing film advance, the span of which is determined by the frame-heights of the outgoing and incoming film formats, followed by an output of successive film advances with a span corresponding to the frame-height of the incoming format.

17. A film projector movement for transporting film through a projector, wherein the film has perforations along its edges and frames between the perforations, comprising:

a plurality of sprockets and an intermittent movement device for moving the film through the projector;

motor means for rotating the sprockets and actuating the intermittent movement device at selected speeds and for intermittently positioning the film frame-by-frame past an aperture in the projector;

control means for controlling the motor means and for either maintaining or changing the movement of the intermittent movement device, the rotational speed of the sprockets and the movement of the film based on the format of the film in terms of the number of perforations spanned by each frame on the film and based on the projection frame-rate in terms of frames per second; and

control means for controlling the motor means and for providing a first indexing move, based on the frame-heights of the outgoing and incoming film formats, to provide proper framing of the incoming film format.

18. A method of transporting film through a projector having a motive element that rotates a plurality of sprockets that advance the film, and an intermittent movement device that moves the film frame-by-frame past an aperture, comprised of determining the film format in terms of the number of perforations spanned by each frame on the film and determining the film frame-rate in terms of frames per second passing through the aperture, and controlling the motive element

to either maintain or change the rotational speed of the sprockets and the movement of the intermittent movement device based on the film format.

19. A method of transporting film through a projector having a pair of constant speed sprockets that engage perforations on the film to advance the film at a uniform rate and an intermittent advance device to advance the film frame-by-frame past an aperture in the projector, wherein a first motor has a rotational output that rotates the constant speed sprockets, a second motive element has an output that positions the intermittent advance device, and a third motor has a rotational output that rotates a shutter, comprised of:

determining the incoming film frame-height in terms of the number of perforations spanned by each frame on the film;

determining a first indexing move based on the frame heights of the outgoing and incoming film formats;

determining the film frame-rate in terms of frames per second passing through the aperture;

controlling the rotational output of the first motor and the rotational speed of the constant speed sprockets based on the film format;

controlling the output of the second motive element and the positioning of the intermittent advance device based on said first indexing move and the incoming film format; and

controlling the output of the third motor and also the movement of the intermittent advance device based on the film frame-rate.

20. The method of claim 19, further comprised of generating a trigger signal that ~~controls the output of the first, second and third motors, wherein the trigger signal is based on the~~ film format and frame-rate.

21. The method of claim 20, further comprised of encoding information onto the film that identifies the film format and frame-rate, and then sensing that information to generate the trigger signal.

22. The method of claim 21, further comprised of sending the trigger signal to a controller that, based on the trigger signal, generates a second signal that controls the rotational output of the first motor.

23. The method of claim 22, further comprised of providing a plurality of trigger strips on the film at locations corresponding to a change in the film format or frame-rate, encoding information onto the trigger strips that identifies the changed film format or frame-rate, and sensing that information to generate the trigger signal.